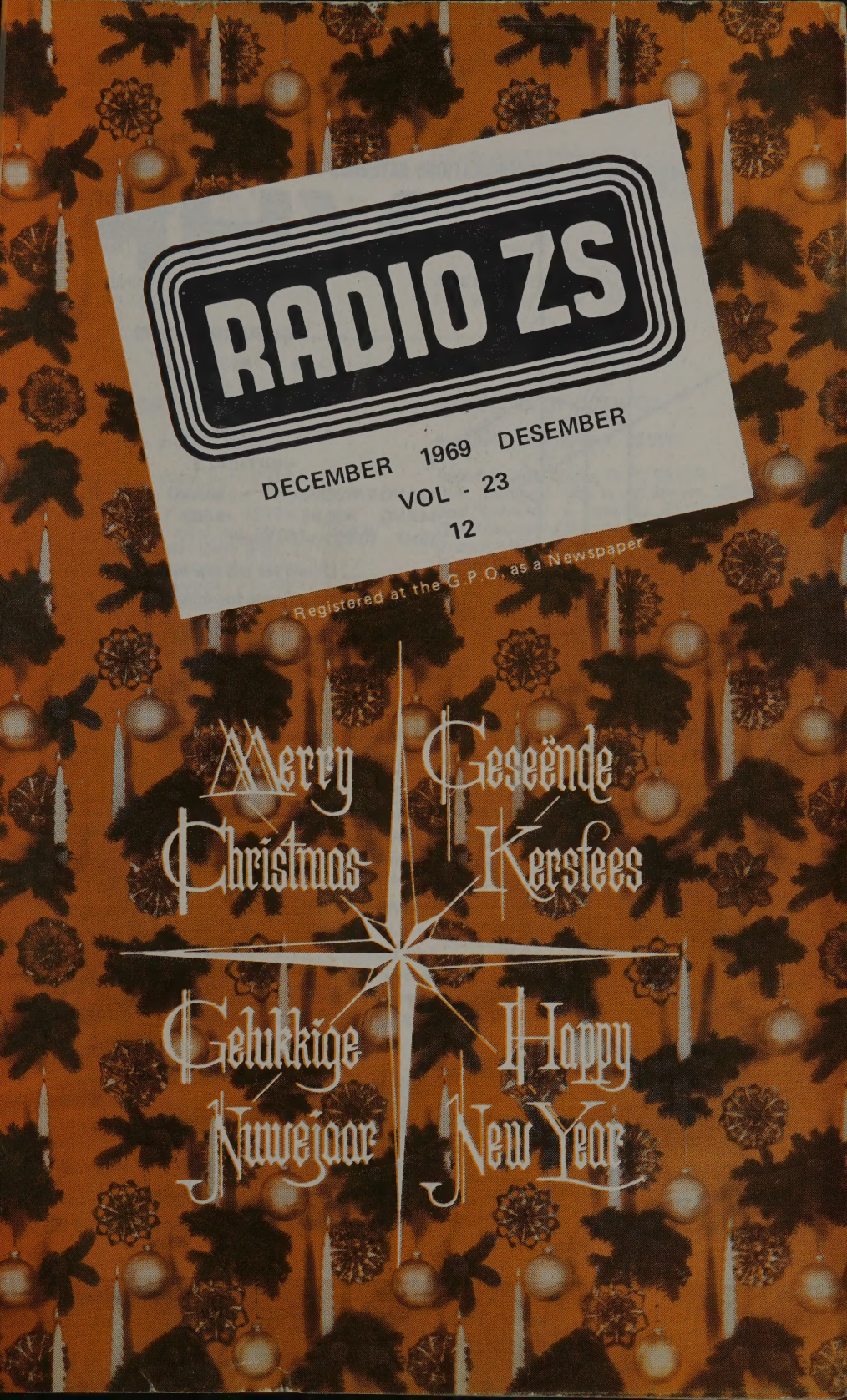
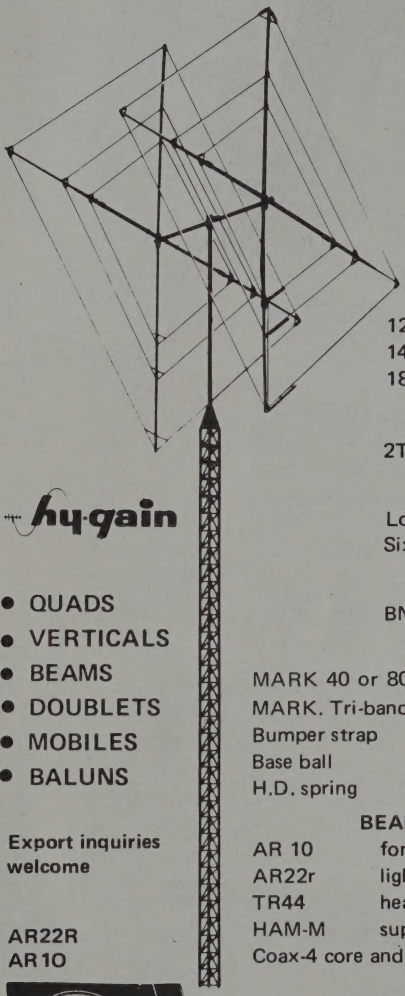

RADIO ZS
DECEMBER 1969 DESEMBER
VOL - 23
12
Registered at the G.P.O. as a Newspaper
Merry Christmas
Geseënde Kersfees
Gelukkige Nuwejaar
Happy New Year

# HF
# VHF

hy-gain COMMUNICATIONS ANTENNAS FOR HF & VHF AMATEUR BANDS

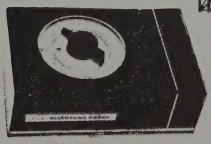


hy-gain

- QUADS
- VERTICALS
- BEAMS
- DOUBLETS
- MOBILES
- BALUNS

**Export inquiries welcome**

AR22R
AR10



**TRI–BAND 10-15-20**

| | |
|---|---|
| Quad | R109.95 |
| TH3jr | R 92.50 |
| TH3mk3 | R139.95 |
| TH6dxx | R169.95 |

**VERTICALS**

| | | | |
|---|---|---|---|
| 12AVQ | R26.95 | 18AVQ | R63.94 |
| 14AVQ | R39.95 | LC80 | R12.95 |
| 18HT | 10-80 meters tower | | R169.95 |

**Dipole for the low bands**

2TDQ set of traps coils for 40&80 dipole R26.95

**V.H.F. BEAMS**

Log periodic for 2 & 6 meters LP 62 R62.50
Six elements for 2 & 6 meters DB 62 R41.50

**BALUN**

BN 86.1000 watts, ferrite balun R14.75

**MOBILE**

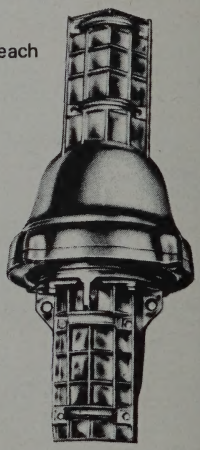
MARK 40 or 80 meter Helical Whips RI8.85 each
MARK. Tri-band helical whips. R27.50

| | |
|---|---|
| Bumper strap | R4.75 |
| Base ball | R6.50 |
| H.D. spring | R4.95 |

**BEAM ROTATORS. C.D.R.**

| | | |
|---|---|---|
| AR 10 | for T.V. and VHF | R32.40 |
| AR22r | light beams | R45.90 |
| TR44 | heavy beams | R74.90 |
| HAM-M | super de luxe | R129.60 |

Coax-4 core and 8 core cable ex stock



HOLLANDS RADIO

143 Greenway,
Greenside,
Johannesburg.

Tel. 41-8557.
After Hours 46-1841.

# SUID-AFRIKAANSE RADIOLIGA — SOUTH AFRICAN RADIO LEAGUE

**HOOFKANTOOR**
Posbus 3911, Kaapstad
C.T.M. Gebou, Loopstraat 112
Telegramme: SARLEAGUE

**QSL-BURO:** Posbus 3037, Kaapstad

**ADVERTENSIES:**
Posbus 137, Kaapstad

**HEADQUARTERS**
P.O. Box 3911, Cape Town
C.T.M. Buildings, 112 Loop Street
Telegrams: SARLEAGUE

**QSL Bureau:** P.O. Box 3037, Cape Town

**ADVERTISEMENTS:**
P.O. Box 137, Cape Town

---

## RAADSLEDE

President: **H.M. Wilson, ZS1BF**

Vise-President: Colin Duff, ZS1CA
Eresekretaresse: Mev. A.v.d. Merwe, ZS1AZ
Eretesourier: J. Timoney, ZS1TK
QSL-bestuurder: J.E.J. v.d. Merwe, ZS1AW
Takaangeleenthede: Colin Duff, ZS1CA
Radio ZS - H.K. Notas: H. Forrer, ZS1FT
Toekennings-bestuurder: J.G. Gerryts, ZS1VA
P.M.G. - Skakelbeampte: Doug Pitchford, ZS6YB
Tel. Pretoria: 74-5441 (na ure)

Ereregsadviseurs: N.J.J. van Resnburg, ZS1PI

Wedstrydkomitee: DURBAN Tak, Posbus 205, Pinetown.

Roepseinboek Redakteur: Eric Rhodes ZS1R

## MEMBERS OF COUNCIL

President: **H.M. Wilson, ZS1BF**

Vice-President: Colin Duff, ZS1CA
Hon. Secretary: Mrs. A.v.d. Merwe, ZS1AZ
Hon. Treasurer: J. Timoney, ZS1TK
QSL-Manager: J.E.J. v.d. Merwe, ZS1AW
Branch Affairs: Colin Duff, ZS1CA
Radio ZS - H.Q. Notes: H. Forrer, ZS1FT
Awards Manager: J.G. Gerryts, ZS1VA
P.M.G. Liaison Officer: Doug Pitchford, ZS6YB
Tel. Pretoria: 74-5441 (after hours)

Hon. Legal Adviser: N.J.J. Van Rensburg, ZS1PI

Contest Committee: DURBAN Branch, P.O. Box 205, Pinetown.

Callbook Editor: Eric Rhodes ZS1R

---

## JAARGELD

| | |
|---|---|
| Gewone Lid | R4.75 |
| Junior Lid | R2.25 |
| Eggenote van Lid | R2.25 |
| Geasossieerde Lid | R2.75 |
| Inskrywingsgeld (sluit Liga lapel wapen in) | R0.75 |

## SUBSCRIPTIONS

| | |
|---|---|
| Ordinary Members | R4.75 |
| Junior Member | R2.25 |
| Spouse of Member | R2.25 |
| Associate Member (27/6d.) | R2.75 |
| Entrance Fee (includes League Badge | R0.75 |

---

## ADVERTENSIE TARIEWE

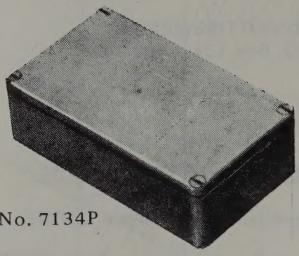
| Gewone Posisies<br>Plasings | 1-5 | 6-11 | 12 |
|---|---|---|---|
| | | prys per plasing | |
| Vol Bladsy | R27 | R25 | R23 |
| Half Baldsy | R15 | R13 | R12 |
| Kwart Bladsy | R 8 | R7.50 | R 7 |
| Omslag | | R35 | R30 |

## ADVERTISING RATES

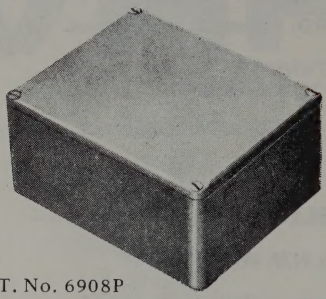
| Ordinary Positions<br>Insertions | 1-5 | 6-11 | 12 |
|---|---|---|---|
| | | price per insertion | |
| Full Page | R27 | R25 | R23 |
| Half Page | R15 | R13 | R12 |
| Quarter Page | R 8 | R7.50 | R 7 |
| Covers | | R35 | R30 |

# EDDYSTONE

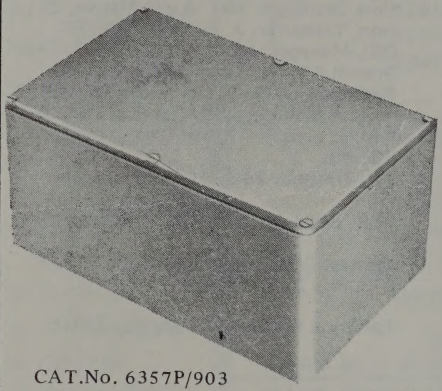
LOW COST DIECAST BOXES



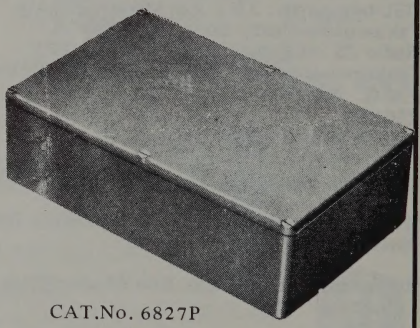
CAT. No. 7134P



CAT. No. 6908P



CAT.No. 6357P/903



CAT.No. 6827P

- INSTRUMENT AND METER CASES
- FILTER NETWORKS
- SWITCHING
- AUDIO AND RADIO FREQUENCY DISTRIBUTION

Available Ex Stock from:–

## MARCONI (South Africa) Ltd

PRIVATE BAG 1038, Benoni. Tel. 52-5961

RADIO ZS

P.O. Box 137 Cape Town
Posbus Kaapstad

EDITORIAL COMMITTEE: *Ray Alexander ZS1IM*
*John Hugo ZS1SC*

COPY CLOSING DATE: *20 days before the month of publication*
KOPIE SLUITENSDATUM: *20 dae voor die maand van publikasie.*

## CONTENTS – INHOUD

**General/Algemeen**

President's Message H. M. Wilson ZS1BF 5
Die Tegnologiese aanslag van die Amateur Radio Diens deur Annie van der Merwe ZS1AZ 6
Intruder Watch and the W.I.A. 20
Hamads 28

**Technical/Tegnies**

Continuously Adjustable Fully regulated Low Voltage Power Supply by Henry Randall ZS5HF 9
D.F. Hunting, the Pretoria Way by D. E. Brook ZS6AES 13
6-Meter Ham Operation the easy way by Technico 22
More current from V.R. Tubes by Curtis Goodson W4QBU 23

**Operating/Bediening**

Amendments to Call Book No 22 18
Frequency Prediction Charts 19
Radio Society of Rhodesia Code Proficiency Test 23
South West Africa Contest 23
H.Q. Notes by Herman Forrer ZS1FT 24
Luanda Festival Award 26
1969 SSB Contest 26
The Y.L. Trophies 27

*Merry Christmas*

**Jam-packed with Gen . . . . .**
**Right up to the Minute . . . . .**
**And well worthy of your inspection . . . . .**

| | |
|---|---|
| Amateur Radio Techniques (Hawker) | R1.63 |
| VHF Ham Radio Handbook (MacKinnon) | 3.42 |
| Amateur Radio Circuits Book (Jessop) | 1.35 |
| 104 Ham Radio Projects (Simon) | 3.42 |
| Servicing the Solid-State Chassis (Davidson) | 4.32 |
| Pinpoint Transistor Troubles in 12 Minutes (Garner) | 6.70 |
| Basic Transistor Course (Kenian) | 3.43 |
| Handbook of Transistor Circuits (Lytel) | 3.80 |
| 103 Simple Transistor Projects (Kneitel) | 2.68 |
| De Muiderkring Semiconductor Handbook 1969 ed. | 3.32 |

(Prices Include Postage)

**Please Note: We close from December 16 to January 6.**

**S.A. Radio Publications**

**82 Pasteur Chambers** **P.O. Box 2232**
**191 Jeppe Street,** **JOHANNESBURG** **Tel. 22-1496**

*The Editor and ZS Committee wish all members a Merry Christmas and a Prosperous New Year.*

******************************

*Die Redakteur en ZS-Komitee wens alle lede 'n Geseende Kersfees en Voorspoedige Nuwejaar.*

# President's Message

Once again it is my privilege to address you at the onset of the Christmas Season and the New Year and to offer you on behalf of Council and myself our very best wishes for a happy festive season and a fruitful year in 1970. To all of you, the members and workers of our South African Radio League, our fellow societies and colleagues throughout the world, the Postmaster-General and his staff, the Director and staff of the S.A.B.C., and our listening public we give our thanks for your help and support in the past year and our high hopes that the coming year will bring ever greater strength to our League and the rich reward of fellowship and fulfilment which it brings to us all.

We are fortunate in our hobby which has so many aspects that while it is essentially practical and scientific and provides great scope for the experimenter and builder of equipment it gives equal enjoyment and occupation to the operator and communicator with a minimum of scientific knowledge. It is small wonder that our League, despite the increase in subscriptions and the technical examination, has continued to florish and provide a place in the life of our nation for the Radio Ham. Small wonder, as long as our members have the faith in themselves and our League to give their services to their branches, to RADIO ZS and to all our activities that we shall continue to flourish.

The strength of our League lies in its members and the branches in which they can give expression to their ideas on how to provide the fullest enjoyment of our hobby. Without the branch orgainisation to provide focal points at which our members can meet and to provide starting points for all our other endeavours they could never succeed. So I wish to make this my New Year appeal to you, the members of our League. Do your utmost to strengthen your branch, to talk non-members into joining, to serve on the committee, to take part in all the branch activities and generally to help make your branch an active lively part of our League. In that way you will help to build up our League into a bigger and better body than ever before.

**ZS1BF**

## DIE TEGNOLIGIESE AANSLAG VAN DIE AMATEUR RADIO DIENS
**(met erkenning aan die A.R.R.L.)**

Onlangs het ek in 'n navorsingswerk van die A.R.R.L. oor Amateur Radio en die invloed wat dit op ons samelewing gehad het, baie interessante feite raakgeloop, waarvan ek net een aspek vir u hier wil weergee. Hier volg dan 'n deel van die gegewens oor die Tegnologiese aanslag van Amateur Radio.

Dwarsdeur sy bestaan het die Amateur Radio Diens 'n gedurige vermoë aan die dag gelê om groot bydraes te lewer aan die tegnologiese ontwikkeling van die nasies waaraan dit diens gelewer het. Die bydraes is hoofsaaklik op die volgende gebiede gemaak:

1) Amateur Radio het herhaaldelik stukrag gegee vir die ontwikkeling van nuwe tegnieke en tegnologie.

2) Dit het 'n breë basis geskep vir eksperimenteer en navorsing.

3) Amateur Radio was 'n groot bron van motivering vir loopbane vir wetenskaplikes, ingenieurs en tegnici, asook vir bestuurders van Kommunikasie- en elektronika-maatskappye.

4) Dit het 'n groot en waardevolle reserwe geword van tegnies opgeleide kommunikasie - en elektronika - deskundiges.

Laat ons ons vereers bepaal by die eerste invloedsgebied, en gesels oor die stukrag wat Amateur Radio aan nuwe tegnieke en Tegnologie gegee het. Dit het hoofsaaklik op twee maniere gebeur: 1) deur invoering van nuwighede begin deur of hoofsaaklik bevorder deur amateurs, en 2) deur aanpassings van gevestigde radioteorie.

### NUWIGHEDE

Dit is moeilik om presies vas te stel hoever amateur radio betrokke is in die invoering van nuwighede. Baie vroeë uitvinders was amateurs toe hulle hel eerste uitvindings gemaak het maar het later hulle uitvindings kommersieël ontgin. Sommige, waaronder ook Hertz en Marconi, was professionele wetenskaplikes en ingenieurs, maar het dit geniet om as amateurs te werk in verband met hulle professies of in aanvulling daarby. Ander amateurs het deur die jare ook die patroon van dubbel verwikkeling gevolg. In elk geval het amateurs bygedra tot 'n groot getal belangrike uitvindings.

In die heel vroeë dae van die kuns van radio het feitlik alle uitvindings uit amateur aktiwiteite ontstaan. Edwin Armstrong is tipies, hierdie vroeë uitvinder was a amateur, tenminste, hy was dit aan die begin van sy loopbaan. Terwyl hy aan die Universiteit van Columbia studeer het in 1912, het sy sy insig in vernuwing en die beheer daarvan in radio-kringlope ontwikkel. Alhoewel sy latere eksperimentele werk as professionele wetenskaplike gedoen is, het hy altyd sy belangstelling in amateur aktiwiteite behou.

In die jare na die eerste Wêreld oorlog het die radio amateurs meer geword en groter bydraes aan basiese radio teorie gelewer, waaronder ons die volgende kan aandui:-

1) Bydraes deur individuele amateur radio-operateurs, en deur amateurs te saam, tot die ontwikkeling van die

teorie van ionosferiese - en ionosferiese-wegspattings-uitsendings.

2) Die ontwikkeling en eerste gebruikmaking van ossilators met kristalkontrole vir frekwensstabiliteit, in 1924.

3) Die ontwikkeling van 'n manier om kragversterkers te neutraliseer, wat dit moontlik gemaak het om standvastiger hoof-ossilators, en kragversterkers te bekom.

4) Die ontdekkings, vroeg in die dertiger jare, van straalbreking in BHF verspreiding.

5) Die ontdekking, in 1934, van die weerkaatsing en straalbreking van BHF golwe in die laer atmosfeer.

6) Pioneerwerk en deelname aan die ontwikkeling van due verspreidings teorie en tegnieke vir langafstand kommunikasiesin die BHF en UHF bande deur sporadiese ionisasie en meteorwegspatting.

Deelname van radio amateurs in nuwe wetenskaplike ontdekkings bly groot en sal seker in die toekoms ook groot wees. Die verwagting volg op die feit dat al hoe meer amateurs ook verwikkel raak in die kommunikasie — en elektronika-industrië of in verwante akademiese werk.

Baie van die amateurss span hulle professionele kennis ook in by hulle aktiwiteite en doen dan eksperimente wat ook op hulle werk betrekking het. Verskeie geleerdes op opvoedkundige gebied skrywe oor hulle programme en versprei algemene inligting oor hulle teorie en bevindings in amateur tydskrifte selfs voordat hulle dit formeel vir publikasie verwerk en vrystel.

**2) Aanpassings van gevestigde radioteorie.**

Amateurs eksperimenteer graag. Dis daarom dat hulle bydraes maak tot die radiowese; praktiese bydraes wat nie noodsaaklik verbind is aan een of anderformele wetenskaplike navorsing nie.

Die stukrag vir hierdie soort aktiwiteit onstaan gedeeltelik 1) uit ekonomiese oorwegings, waar amateurs met klein begrottings streef om die maksimum verrigting uit hulle toerusting te kry en 2) miskien meer belangrik, uit die groeiende gedrang op die amateurbande en die beperkings van die eksklusiewe spasie in die bande wat uit regulasies voortvloei.

Sommige van die meer belangrike aanpassings wat deur amateurs bygebring is sluit die volgende in:

1) Die prestasie van lang-af-stand UHF en BHF kommunikasie deur die gebruik van die maan as 'n reflektor ("Moonbounce").

2) Die ontwikkeling van filtertegnieke vir die verbetering van die selektiwiteit van standaard superheterodyne ontvangstelle.

3) Ontwikkeling van eenvoudige en relatief goedkope tegnieke vir die verkryging van ESB uitsending en ontvangs.

4) Ontwikkeling van die Oscar satelliet series en van die relatief goedkope en eenvoudige toerusting vir kommunikasie daarmee.

5) Ontwikkeling van 'n kode-tikmasjien wat rekenaar tegnieke vir toetse gebruik.

6) Die aanpassing van laser ontwerpe vir eksperimentele kommunikasies.

Miskien is die meeste aanpassings wat deur die amateurs gemaak is die gevolg van die behoefte om aan te pas by die groeiende gedrang van stasies op die amateurbande.

Die aanpassings is nie dramaties aan-

gekondig nie, omdat hulle so geleidelik ingekruip het deur 'n aantal jare. Eers is ossilators met kristal-kontrole ingebring om frekwens-wegdrywing te verminder en om dit moontlik te maak om meer senders te bedien in 'n klein afdeling van die spektrum. Die „enkelsein" ontvangs tegnieke is ontwikkel om die selektiwiteit van ontvangstelle te verbeter en om dit vir amateur operateurs moontlik te maak om tussen senders te onderskei selfs as hulle nader aan mekaar in frekwens is. Rigstralers is as antennas ontwikkel sodat die rigting van seinuitstraling gekontroleer kon word en ongewenste seine van ander rigtings verwerp kon word. Filters en „spraak-beperkers" is ontwikkel om die syband uitsendings van foonsenders te beperk. Enkelsyband uitsendings is onderneem en een voudiger en goedkoper gemaak om 'n kommersiele kommunikasie-tegniek te word.

Amateurs was pioniers in die gedurige aanpassing by die veranderlike verspreidings-toestande in die HF deel van die spektrum en sodoende meer senders op die HF bande uitsaaiplek te gee. Namate die gedrang op die bande groter word sal kommersiële en amptelike sendstasies verplig word om die amateurs se uitsaaimetodes, van inluister na seine en verskuiwing om aan te pas by verspreidings toestande, na te volg. In die verskillende weermagte van die wêreld is hierdie les al geleer.

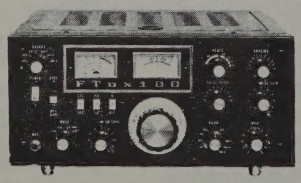
Dit moet ook in aanmerking geneem word dat amateurs hoofsaaklik self betaal vir die eksperimente wat hulle maak en die navorsing wat hulle in hulle stokperdjie doen. As die eksperimente en navorsing deur industrieë utigevoer en gefinansieër moes word, sou dit baie duurder wees.

Amateur radio het bewys dat hulle beskik oor 'n enorme reserwe van potensiële hulpbronne van navorsing wat nie inpas by spesifieke navorsingsprogramme nie. 'n Amateur eksperimenteer in die rigting waarin hy belang stel omdat hy te bewerk wat hy op die oomblik nodig het, sonder inagneming van die feit dat hy dalk nie sal kan bereik wat hy be-oog nie. Alhoewel industrie gewoonlik meer en beter toetstoerusting kan maak en gebruik, bereik die amateurs baie keer net sulke goeie resultate deur 'n plan van hulle eie te maak wanneer hulle in die knyp sit. So bou hulle self ook goeie toerusting om te gebruik.

*(verwerk deur ZS1AZ uit Amateur Radio; An International Resource for Technilogical Economic and Sociological Development.)*


YAESU

FTDX 100



The latest version of this all band SSB-AM & C.W. Transceiver for your car or home.

**R390.00**

HOLLANDS RADIO

# CONTINUOUSLY ADJUSTABLE FULLY REGULATED LOW VOLTAGE POWER SUPPLY

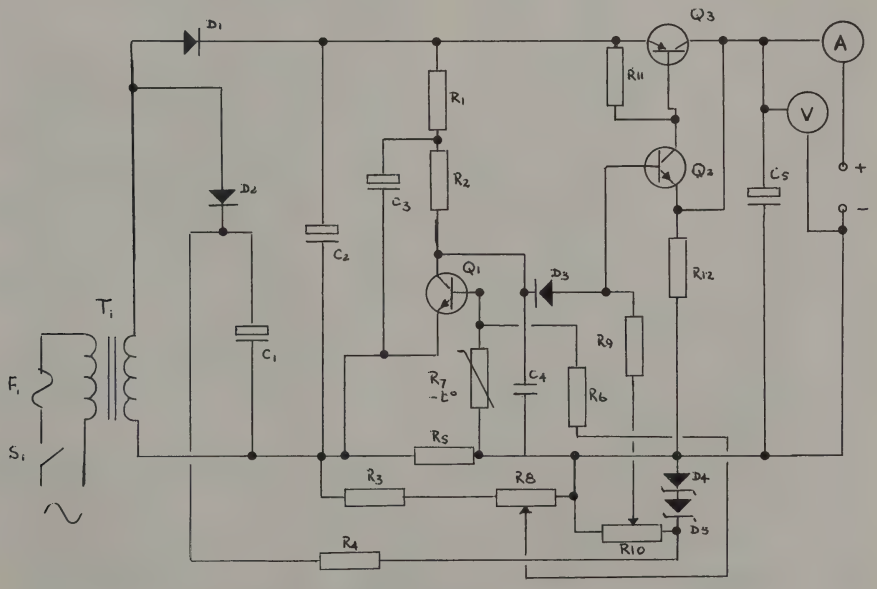
**by Henry Randall ZS5HF**

The circuit shown herewith provides a highly stabilized output voltage between 0 and 15V at a maximum loading of 1 Amp. The ripple voltage is extremely low at 0.002% or 20mV and the unit will provide an output voltage with even less ripple if less than the maximum current is drawn.

A brief technical description of the circuit operation is as follows:-
Transformer T1 delivers an AC voltage in the order of 25V which is rectified by D1. D2 which is also a rectifier provides only the DC voltage required for the two Zener reference diodes D4 and D5.

The output voltage is set by R10.

The output voltage determined by the setting of R10 also appears on the emitter of transistor Q2, the reference voltage being fed to the base of the same transistor. When the base of transistor Q2 is negative with respect to the emitter there will be no base current drawn and as a result there will also be no collector current. As the collector is connected to the base of the series regulator Q3, Q3 will also be non-conductive and its high resistance will cause the voltage at the output or collector to also decrease. However, when the base of Q2 becomes positive




CIRCUIT DIAGRAM FOR CONTINUOUSLY ADJUSTABLE FULLY REGULATED, OVER CURRENT AND THERMALLY PROTECTED LOW VOLTAGE BENCH SUPPLY.

with respect to its emitter Q2 will commence conducting and so will Q3 by virtue of the collector current in Q2. This has the result of causing the output voltage at the collector of Q3 to rise.

A state of balance will be realised with the difference between the reference voltage and output voltage varying from approximately 0.5 and 0.8V — these limits being predetermined by the parameters of Q2 where 0.5V causes the transistor to be fully switched 'off' and the 0.8V being the full 'on' condition. Because the circuit is capable of responding to fast voltage variations, the use of a bridge or full wave rectifier becomes superfluous as the improved ripple conditions would be very slight.

In addition to being able to set the output voltage at will it is also possible to set the maximum current that can be drawn and the principal components used to achieve this is R5 and transistor Q1. When the supply is delivering power a voltage is developed across R5 — the magnitude of the voltage being directly proportional to the current being drawn. A small percentage of this voltage, depending upon the setting of R8 is fed to the base of Q1. The moment that the base of Q1 reaches 0.5V it starts to conduct which causes the collector voltage of this transistor to fall. When this voltage falls below the base voltage of Q2, current starts to flow through R9, R10 and D3. The result of this action is a fall in the base voltage of Q2 which then causes the output voltage appearing at the collector to Q3 to fall as well. In other words the setting of R8 determines the maximum current that can be drawn.

The worst possible operating conditions for the series regulator Q3 are such that when a high current and low voltage exist at the output terminals because under these conditions Q3 is dissipating maximum power. Protection for Q3 is achieved by the insertion of the NTC resistor in the base circuit of transistor Q1. The NTC resistor is mounted on the same heatsink as Q3 and in such a position that any excessive heat generated by Q3 is passed on to the NTC resistor which then changes its value and thereby causes Q1 to conduct ahead of the setting of R8. The rest of the operation of the 'protection' circuit is as previously described for the automatic limiting of current.

The only other component worthy of special note is the ceramic capacitor between the negative rail and the collector of Q1. The purpose of this item to prevent any tendancy for the power supply to produce parasitic oscillations at radio frequencies.

Like all semiconductor circuits there are generally several points which have to be watches — especially in 'power' circuits. Transistor Q3 can develop a fair amount of heat and it is suggested that a heat sink at least four inches square and one sixteenth inch thick be employed and this should also be placed where there is plenty of air circulation. For example do not mount this transistor and its heat-sink underneath a chassis. In the circuit diagram the output voltage has been shewn as floating, but if you like you can make the positive output at ground potential and then there is no need to insulate Q3 from the chassis or front panel which can then also double as the heatsink. If you use the special mounting

kit available for Q3 you can still use — the chassis or front panel as a heat-sink and either positive or negative terminals can then be grounded. The NTC must be mounted as close a practical to Q3 if it is to provide maximum protection. While it is not strictly necessary to mount D1 on a heat-sink, you can only gain by doing so, but htis item must of course be isolated from the chassis from a electrical stand-point. 'Clip' type heat-sinks could also be fitted to the other two transistors and also to the two Zener diodes for added protection of these items.

You may experience a little difficulty in locating the 300 ohm and 4k7 pots as single items but the values are not all that critical — a 10% tolerance is quite permissable — so there is no reason why you cannot use a more common value of pot and shunt it with a suitable value of fixed resistance so that the combination is close to the stated values. The transistors specified are European types but American equivalents would be equally effective. The Thermistor (NTC) is a Philips type and carries the computor code of 2322 642 21472, but here again any thermistor of equivalent value should be alright if you effect a mounting arrangement to readily transfer heat generated by Q3 to the NTC.

I can claim no originality for the circuit and data herewith except that of presentation.

(Submitted by **OM Henry Randall, ZS1HF.**

**Component schedule for Regulated Power Supply.**

R1 . . . . 1k $\frac{1}{2}$ W
R2 . . . . 2k2 $\frac{1}{2}$W
R3 . . . . 15 ohm $\frac{1}{2}$W
R4 . . . . 1k5 1W
R5 . . . . 5 ohm 10W
(Use two 10 ohm 5W in parellel)
R6 . . . . 270 ohm $\frac{1}{2}$W
R7 . . . . 4k7 (NTC Thermistor)
R8 . . . . 300 ohm Linear pot
R9 . . . . 1k $\frac{1}{2}$W
R10. . .. 4k7 Linear pot
R11 . . . 150 ohm $\frac{1}{2}$W
R12 . . . 110 ohm 2W
(Use two 220 ohm 1W in parallel)

C1 . . . . 680uF 40V Electrolytic.
C2 . . . . 4000uF 40V Electrolytic.
C3 . . . . 220uF 40V Electrolytic.
C4 . . . . 1nF 500V Ceramic (1nF is the same as 1kpF)
C5 . . . . 680uF 40V Electrolytic.

T1 . . . . Standard primary 220V or to suit.
Secondary 20 to 25 V @1.5 to 2.0 Amps.

D1 . . . . BY118
D2 . . . . BY126
D3 . . . . AA119
Q1 . . . . BC107
Q2 . . . . BC107
Q3 . . . . AD149
D4 and D5 . . . . BZY88 C8V2.

Ammeter . . . . 1.0 to 1.5 Amps.
Voltmeter . . . 15.0 to 25.0 Volts.
Fuse . . . . . 0.5 Amps 250V.
Switch . . . . . Anything for mains use

THE LATEST

# YAESU

TRANSCEIVER

# FT-200

This is the best and cheapest transceiver available, at a price you can afford. S.S.B.–C.W.–A.M.–Ultra stable VFO, geared dial mechanism, 1 Khz read out. Can also be used on 6 meters with transverter. ALC, AGC, RIT, VOX, MOX, ANL, x-tal calibrator, side tone gen. 16 tubes and 18 semiconductors. Separate detectors for SSB and AM. For R324.00 you get a 240 watts SSB transceiver. AC power supply and a speaker in cabinet.

DC power supply R75.00

De luxe mike R26.00

weight 18 lbs. Dimensions 13 ½ x 5 ½ x 11"

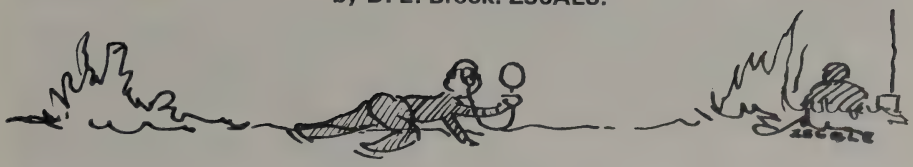
**Selectable Upper or Lower Sidebands.**

HOLLANDS RADIO

ONLY R324.00 Ham nett.

## D.F. HUNTING, THE PRETORIA WAY

**by D. E. Brook. ZS6AES.**



If you still have your March 1962 issue of "Radio ZS" then you do not really need to read any further!

The P.T.A. Boys took up the delightful hobby, exercise or whatever you may like to call D.F. Hunting, shortly after the Highveld published their articles in the "Radio ZS" referred to above.

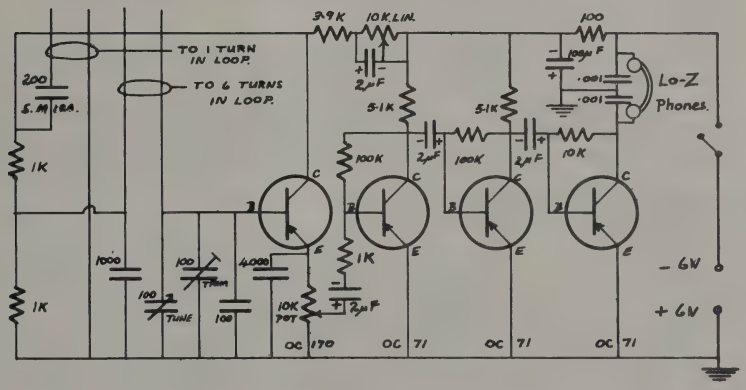
However, the League has gained a lot of new members since those days and it is thus by popular demand that I have taken it upon myself to reproduce the original "Highveld" circuit toegther with the "Pretoria" layout and mode of assembly.

Just for the record, "PTA" and "Highveld" indulge in an annual clash on 1.95 MHz. The last event was held in May of this year and a total of fifteen teams participated in the big hunt which was held on neutral ground halfway between Pretoria and Johannesburg.

The start was at Halfway House and ordinary filling station road maps were used for plotting bearings on. Even as in 1962 the gathering and rag-chew afterwards was eagerly looked forward to and indeed many a tale was told before we all reluctantly made our various ways home.

And now a few words of advice on the construction of the transistorised R.X. will not be out of place:

The circuit board is mounted against the front panel of a 3" x 3" x 6" high aluminium box by means of small studs which can be obtained from your radio spares dealer.



The shafts of the tuning condensor and volume and regen. pots. project through the front panel and slots are cut below these for access to the slide switch and phone jack is above ground and you must therefore avoid any possible short circuit on the front panel.

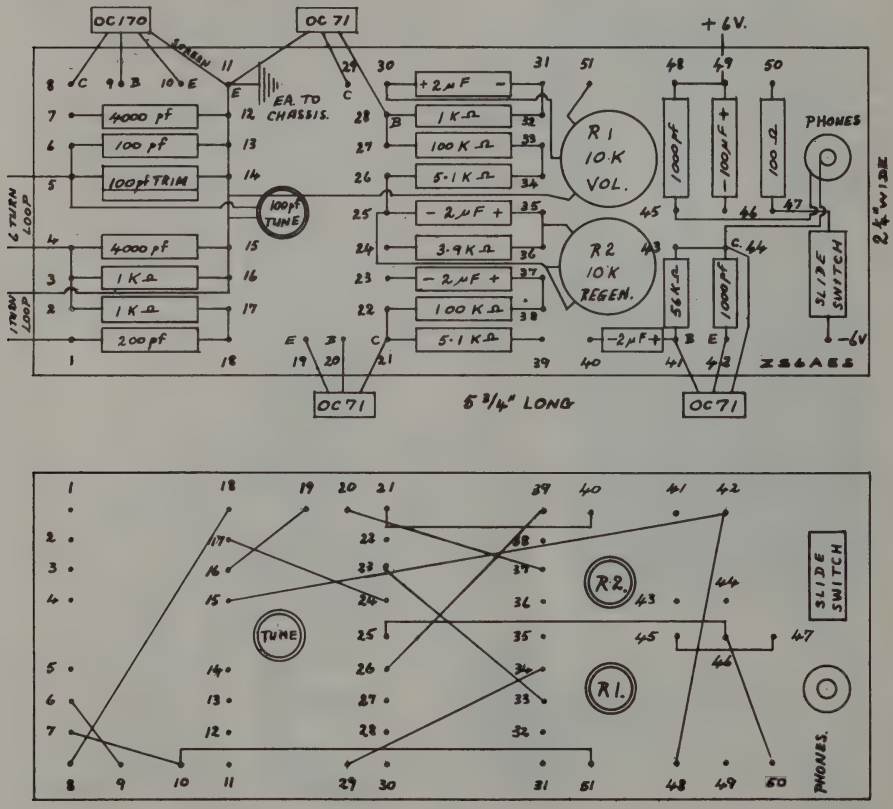
There is ample space in this box for mounting a holder for the four penlite cells which supply the power.

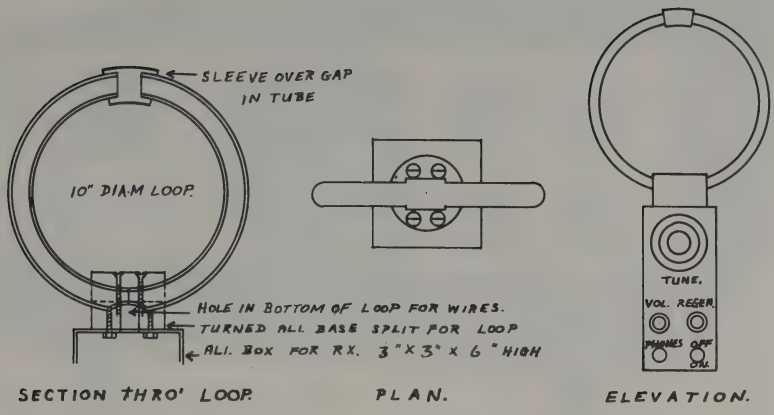
The loop is a 10" diameter aluminum tube of $\frac{1}{2}$" bore. Neither diameter nor bore is really aritical but endless difficulty may be experienced in threading the aerial through a smaller tube and on the other hand it is more difficult to bend a thicker tube neatly.

Pour ample "baby powder" into the tube to facilitate the threading exercise and make absolutely certain that you don't cause a short in the loop due to the abrasive action of pulling the wire around inside the restricted working area of the loop.

The bright boys in PTA simplified matters by making the loop in two semi-circles and clamping them in position with the split aluminum block as shown in the diagram.

A thin plastic tube inserted inside the aluminum loop will assist greatly






in preventing short circuits. Experience has shown that Litz wire is a better performer than ordinary enemalled wire and it is worth while going to a little more trouble in this respect.

Place some small protective tubing around the wires where they emerge from the lower hole as the sharp edges of this hole will otherwise quickly cause short circuits.

The OC 170 and the OC 71's are usually found in the junk box today but modern equivalents, of course, will work very well.

As a variation on the theme some of the PTA boys have constructed plug-in loops which can be replaced with a plug-in coil for listening to broadcast stations or for experimenting on other frequencies if desired.

It is useful to have a few rules when hunting otherwise things can go hay wire. For example, the transmission times should be laid down and these of PTA are similar to Highveld in that a C.W. transmission of three minutes every ten minutes elapsed is used for the first hour followed by one minute every five minutes elapsed for the second hour, Starting time is 14.30 hours on the second Saturday of

We are **SPECIALISTS** in tubes and semi-conductors, ready to supply either one replacement tube or major annual requirements covering the full frequency spectrum, for:

✓ AMATEURS
✓ COMMERCIAL BROADCASTERS
✓ INDUSTRIAL USERS
✓ TELEPHONE COMMUNICATIONS

CURRENT CATALOGUE AVAILABLE ON REQUEST

**ELECTRONIC RESEARCH LABS.**
CAPE (PTY.) LTD.

ERL

411 LIBERTAS
HERTZOG BOULEVARD
FORESHORE, CAPE TOWN
TELEPHONE 2-4869

## *The Heathkit HW-100 Five-Band SSB-CW Transceiver*

**Solid-state (FET) VFO — 80-10 meter coverage — Switch selected upper or lower sideband or CW — 180 watts input PEP SSB.**
**Crystal filter — Full coverage on all bands with 500 kHz per band segment.**
**—Smooth vernier control of frequency with patented dial mechanism — built-in 100 kHz calibrator — Separate offset CW carrier crystal — TALC — Quiet, enclosed relays — Fixed or mobile operation with HP-23 or HP-13 power supplies — Easy assembly with circuit boards and wiring harness.**

**Designed To Leave The Rest Of The Field Behind . . .** in performance, in price, in value. You can check the specs. and be impressed, but in general, the HW-100 operates with a hybrid circuit that uses 20 tubes (26 functions),,two transistors (one an FET for the VFO), six germanium diodes, nine silicon diodes, and one Zener diode. Everything but the VFO, final amplifier, and various controls mount on nine circuit boards for stable, dependable, easy-to-build circuitry.

**Here's what it delivers.** The receiver portion of the HW-100 has a sensitivity figure of less than $\frac{1}{2}$uv for a 10 dB S+N/N ratio for SSB operation Crystal filter selectivity is 2.1 kHz at 6 dB down, 7 kHz at 60 dB down. Image and IF rejection better than 50 dB.
The transmitter section in SSB continuous duty is 180 watts PEP. It operates PTT or VOX on SSB, and CW transceive is provided by operating VOX from a keyed tone, using grid-block keying. CW side-tone is 1 kHz, internally switched to speaker or headphones. Carrier and unwanted sideband suppression is 45 dB down; third order distortion 30 dB down, RF compression (TALC) is 10 dB or better. Frequency stabiltiy is outstanding . . . less than 100 Hz drift per hour after 30 minute warmup . . . less than 100 Hz variation under a 10% line voltage variation.

**Easy To Build.** Most components mount on 9 circuit boards and the one wiring harness makes interconnection simple and fast. For the best value and performance in sideband, make the HW-100 your rig now!

**A Pleasure To Use . . .** the tuning provides 28 revolutions of the knob per 500 kHz band segment, with 2kHz divisions. A zero reset button is adjacent. To the left are the Band Selector switch, Mode selector, Load and Final tune, Driver preselctor, Mic/CW Level control Mic connector, and Phone jack. To the right is the S-Meter with a 3-position switch for checking ALC, Relative Power, and Final plate current. Adjacent is another 3-position switch for PTT, VOX and Calibrate. RF gain and AF gain controls complete the front panel. Located inside are controls for Meter Zero, Bias, VOX sensitivity, VOX delay, Anti-Trip, Carrier Null, and Neutralizing. On the rear apron are the CW key jack, 8 ohm speaker output, ALC input, Power/Accessory plug, RF output, and Antenna connector.

| | |
|---|---|
| Kit HW-100 | R268.00 |
| Kit SB-600, 8 ohm speaker, | 22.50 |
| Kit HP-13, DC power supply, | 78.50 |
| Kit HP-23A, AC power supply, | 65.35 |

HOLLANDS RADIO

143 Greenway, Greenside, Johannesburg.
Tel. 41-8557. After Hours 46-1841.

each month unless mutually agreed otherwise.

A simple rule of thumb is "If you can hear 'em you can find 'em, but it doesn't always work somehow. This game reminds me of golf. No sooner do you think you have got it taped than you come in last or don't even find the station at all! To help in cases like this a "Starter" is appointed and he hands out sealed instructions at the "start" (a mutually agreed point) and the idea is to hand in the sealed instructions at the hidden transmitter to qualify for points.

Points have been allocated on a time elapsed basis during the last two years in PTA and can be briefly summed up as follows:

Duration of Hunt: 2 hours = 120 min.

| Hunter No. | 1. | 2. | 3. |
|---|---|---|---|
| Starts | 14.30 | 14.30 | 14.30 |
| Finishes | 15.00 | 15.30 | 16.00 |
| Time elapsed | .30 min. | .60 min. | .90 min |
| Deduct from | 1 20 | 1 20 | 1 20 |
| Point gained | 90 | 60 | 30 |
| Points for taking part | 30 | 30 | 30 |
| Total | 120 | 90 | 60 |

Hidden Station:
90 (Net points gained by Hunter No. 1)
60 (Net points gained by Hunter No. 2)
30 (Net points gained by Hunter No. 3)

| | |
|---|---|
| 3 / | 180 |
| = | 60 |
| + | 30 |
| Total | 90 |

The 30 points for taking part are to compensate those who do not make the grade during the two hours of the hunt.

A careful examination of the system will reveal that the dice is loaded in favour of the hidden station and therefore he is penalised his 30 points if he is not heard at the start.

To ensure that the hunt goes on in a case like this, a "clue" is also held by the starter who can open this up at the start and obtain a directional guide for the participants who then head off more or less like the fly crows until the elusive signal is detected. "Highveld" have a similar system but give instructions for an alternate start in case the signal is not heard at the normal start.

This state of affairs often occurs when QRP stations are used for the transmissions. A self-contained two transistor one watt TX constructed by ZS6KO is regularly used by PTA for hiding purposes.

Both ZS6AVC and ZS6PA constructed tape recorder operated transistor TX's which they buried in the ground in a forest and stood around and watched while the boys searched and searched!

"Highveld" have used a mobile hidden TX and this really had the PTA boys foxed during one of our combined hunts.

In order to obtain a suitable map you are advised to go and see your local Publicity Bureau who are more than likely to have something that covers your City to the extent of some 15 miles long by 10 miles wide which

will offer more than enough hiding places for about twenty years of D.F. Hunting.

Get yourself a nice perspex compass of the scouting type which can be used to plot your course. It is also adviseable to mark your map with the lines of declination as applicable to your area.

Remember to keep the ear-phones or any ferrox rods well away from the compass while you are taking bearings otherwise you will get some mighty strange readings.

Do not stand over steel waterpipes and drains or under telephone or power lines and then you just cannot go wrong unless you live in a dolomitic area like Pretoria!

You are now set to have loads of fun and do not forget to wind up the afternoon with a get together and a rag-chew.

PTA have a large Floating Trophy which is awarded to the "Baas Jagter" on a "best of six hunts" basis each season.

O.M. Gerrie, who was last years "Baas Jagter" has developed a mini-D.F. set which I hope he will publish as soon as it has passed all the necessary tests.

---

**AMENDMENTS TO CALLBOOK No. 22**

| | |
|---|---|
| *ZS1BN | B. J. Vosloo (now a member) |
| *ZS1GW | L. E. Young, 42 Oxford Street, DURBANVILLE, C.P. |
| *ZS2ED | S. J. I. Novello , P.O. Bathurst, Via GRAHAMSTOWN. |
| *ZS4EA | L. E. Young, delete – see ZS1GW. |
| *ZS5EC | E. C. Courtney, 91 Bencorrum, Prince Street, DURBAN. |
| *ZS5GK | A. G. Neill, P.O. Box 1902, (2 Rhodes Court, 270 Vause Road), DURBAN. |
| *ZS5KG | Mrs. Muriel Neill, P.O. Box 1902, (2 Rhodes Court, 270 Vause Road,) DURBAN. |
| *ZS5UG | D. J. de Swardt, (now a member) (address as per Callbook). |
| *ZS5XB | A. Shelton Bowyer, 17 Hilldray Crescent, KLOOF, NATAL. |
| *ZS6AMG | Ken C. Kinnear, 8 Hofmeyer Crescent, STILFONTEIN, TVL. |
| *ZS6APM | G. C. Snyman, Posbus 2, Skeerpoort, Oor PRETORIA. |
| *ZS6AZB | H. E. R. Brown – Silent Key – Deceased. |
| *ZS6BBN | L. van der Westhuizen, Posbus 341, KEMPTON PARK, TVL. |
| *ZS6BFU | should read Sam Lieberman. |
| *ZS6BHK | J. L. Liebenberg, 3 Opsporings Battery (S.A.A.V.D) Militêre Basis, POTCHEF-STROOM. |
| *ZS6BJC | should read Mrs. Ada Lieberman. |
| *ZS6C | M. E. J. Brook, c/r 10th Avenue & Wessels Road, Rivonia, Nr. JOHANNESBURG. |
| *ZS6JT | W. R. L. van Velden, c/o Land Bank, P.O. Box 46, ERMELO, TVL. |
| *ZS6MM | H. G. Williamson, P.O. Box 1050, NELSPRUIT E. TVL. |
| *ZS6VX | Dennis W. H. Helyar, P.O. Box 1020, KRUGERSDORP, TVL. |

We wish you a **HAPPY CHRISTMAS** and an enjoyable year of Amateur Radio in 1970

Ons wens u 'n **GESEËNDE KERSFEES** en 'n genotvolle jaar van Amateur-radio in 1970

HOLLANDS RADIO

**Our most sincere thanks for the support you have given HOLLANDS RADIO in 1969*

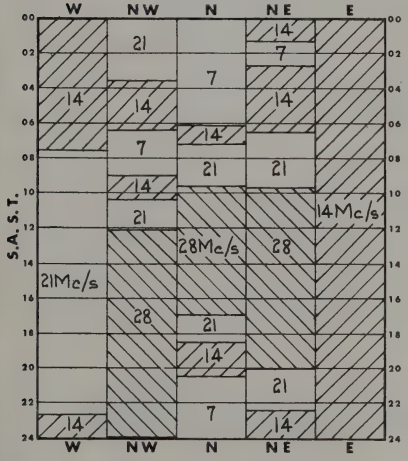
Our motto: **BEST EQUIPMENT at LOWEST PRICES** and remember — we service whatever we sell!

# FREQUENCY PREDICTION CHARTS

**AMATEUR FREQUENCY BAND SELECTION CHART**

FOR CIRCUITS OF LENGTH 6000 MILES IN DIFFERENT DIRECTIONS FROM JOHANNESBURG

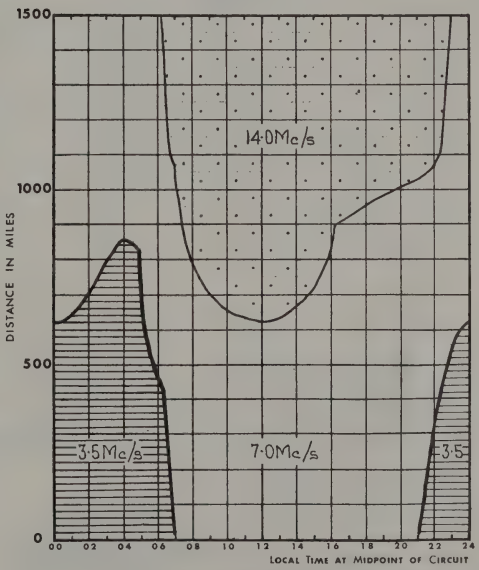
DECEMBER, 1969




NATIONAL INSTITUTE FOR TELECOMMUNICATIONS RESEARCH, C.S.I.R.

**AMATEUR FREQUENCY BAND SELECTION CHART FOR SOUTHERN AFRICA**

DECEMBER, 1969




NATIONAL INSTITUTE FOR TELECOMMUNICATIONS RESEARCH, C.S.I.R.

# INTRUDER WATCH AND THE W.I.A.

*An extract from "Amateur Radio" — Journal of the Wireless Institute of Australia*

The Wireless Institute of Australia, like the R.S.G.B. and A.R.R.L., has initiated an Intruder Watch programme. The programme was initiated by a decision of the Federal Council in 1967 who saw the need for such a programme as an important aspect of the Institute's task of protecting Amateur frequency allocations.

A recent issue of "QST" pointed to the reason why Amateurs need an Intruder Watch. It quoted the Radio Regulations Geneva, 1959, the currently effective international document as follows:

> "Article 3, Section 3: Administrations of the Members and Associate Members of the Union shall not assign to a station, any frequency in derogation of either the Table of Frequency Allocations given in this Chapter or the other provisions of these Regulations, except on the express condition that harmful interference shall not be caused to services carried on by stations operating in accordance with the provisions of this Convention and of these Regulations."

The significance of this provision is that it does not prohibit the allocation of a frequency contrary to the Frequency Table—but makes the allocation contravene the Regulations only when interference is caused. Of course, a broadcasting station in, say, the 40 metre Amateur band, will cause interference to the Amateur Service, but the onus is on the Amateur to demonstrate the interference.

Of course all interference is not the result of deliberate acts. The Intruder Watch also serves to draw attention to inadvertent interference, spurious transmissions caused by faulty equipment or by faulty tune-up procedures, which together with harmonics can also result in interference to Amateurs. Complaints about such transmissions usually result in their rectification. The important function of Intruder Watch is to report the interference. Until the interference is reported, the intruder on Amateur bands may be legitimately there. Basically, any Intruder Watch must depend on the listener or observer.

The significance of reports spread over a vast area such as our continent, is obvious. To be successful, Intruder Watch cannot depend on only a few observers. The initiative for the organisation of the observers rests with the Divisions. Each Division appoints an Intruder Watch Co-ordinator. How he undertakes his task depends largely on his Division and himself. The reports are collated by the Federal Intruder Watch Co-ordinator who passes the information on to the appropriate authority, the Postmaster General's Department. The Federal Co-ordinator also co-ordinates the general activities of the Divisional Co-ordinators, sending out information in regular bulletins and providing them with standard stationery and specifying standard procedures. At least this is how it should work.

Reports have come to the Federal Co-ordinator from two Divisions only since the formal appointment of Divisional Co-ordinators. This, of course, may be due to a number of reasons. It should be noted that the appointment of the last Divisional Co-ordinator occurred only a little over a year ago. Probably, though, the most important reason for this paucity of reports lies in the fact that there are insufficient Amateurs willing to undertake the task

of acting as observers. Perhaps some of the fault may lie with the W.I.A. Have we really published enough information so that every member knows how important this activity is to the Amateur Service? Make no mistake about it—Federal Executive is a little disappointed in the response to date. We want a Federal Intruder Watch Co-ordinator to be complaining of overwork—not underwork.

If you want to know how you can help in your Division, contact your Divisional Intruder Watch Co-ordinator. His name was published on page 14 of the June issue of "Amateur Radio". It may be that some may question whether the Institute's programme is perhaps a little over-elaborate. We don't think so. There are two points about the Institute's programme that are important and these, we think, justify a formal structure rather than a system that depends on Amateurs being urged "to write letters to the Post Office" when intruders are observed. The Institute can only pass the reports on to the appropriate authority.

If the complaint is in respect of an overseas country, certainly no individual could make direct representation to that country. Such complaints may involve official diplomatic representations direct to the country concerned or through the headquarters of the International Telecommunications Union in Geneva. These representations can only be initiated through the Postmaster General's Department. The Postmaster General's Department is also directly responsible for acting on complaints originating within the Commonwealth of Australia. The Department requires complaints to be submitted to it in a proper form.

The Federal Executive has discussed the problems involved with interference reports with officials of the Department and a procedure has been developed so that reports can be easily and effectively processed by the Department.

The other point about Intruder Watch is this. Reports of interference must be reliable. One of the most important tasks of the Divisional Co-ordinators is to guarantee the standard of reports submitted. Misleading or inaccurate reports are not merely worthless, they are positively harmful to the cause of the Amateur Service.

One of the difficulties facing the Institute in carrying out its prime responsibility of protecting Amateur frequency allocations is that it involves activities in which our membership generally can only participate remotely. Intruder Watch represents one area where not only can all members participate, but without their participation the job just cannot be done.

MICHAEL J. OWEN, VK3KI,
Federal President, W.I.A.

Amateur Radio, October, 1969


Mosley TRAP MASTER BEAM ANTENNAS

TA 33 JR — MP 33 — Classic 33 etc.

TA33JR — R65.00
MP33 — R81.00

FOR DETAILS. CONTACT:—
143 Greenway,
Greenside,
Johannesburg.

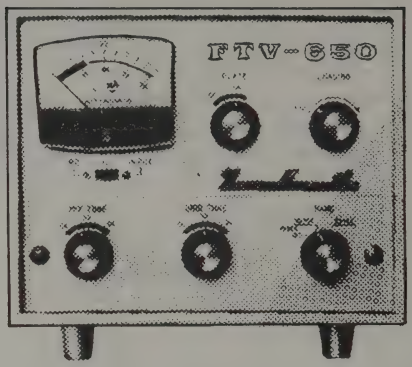
HOLLANDS RADIO

Tel. 41-8557.
After Hours 46-1841.

## 6 METER HAM OPERATION THE EASY WAY

**by Technico.**

Recently a transvertor was developed by a large Japanese manufacturer of HAM equipment and is now available in South Africa from leading HAM




In all modern transmitters and receivers, the frequencies are either added or subtracted in a mixer stage using a tube or a semi-conductor. This is followed by a tuned circuit on the plus or the minus side. The wanted signal is then usually amplified. The same thing happens in a transverter. The The R.F. input is variable between 28 and 30 Mhz. The transverter has a x-tal oscillator on 22 MHz. The two signals are added and the final result is a six meter R.F. signal to your antenna.

The transverter has 5 tubes and 5 semi-conductors and a relay to switch the transmitter to receive. It has a panel meter to read the input and output power as well as the cathode current of the final tube. The power input on AM is 50 watts and this gadget works even better on SSB, CW and RTTY.

In most cases the power is taken from the transmitter via a cable, which is supplied. The 6 meter converter is incorporated in the transverter and also fed back into your own receiver or transceiver.

The advantages of a transverter are that you can QSY on six meters and use the mode of your choice.

Good luck and here's hoping to see you on SIX.

YAESU

SSB—AM—CW TRANSVERTERS

*Join the 6 meter gang!*

ONLY R110.00

Obtainable from

HOLLANDS RADIO

Model FTV 650

*See article above

## RADIO SOCIETY OF RHODESIA CODE PROFICIENCY TEST

The R.S.R.'s Fourth Code Proficiency test run will take place at 9 a.m. (S.A.S.T.) on the 11th January, 1970. There will be a relay on 14040 KHZ ± 5KHZ, beamed on South Africa. Machine sent periods of 3 minutes of code at speeds of 15, 20, 25, 30 and 35 w.p.m. will be transmitted.

ONE MINUTE WITHOUT ERROR AT ANY SPEED qualifies.

Anyone wishing to participate should send their original pen, pencil or mill copy to the Secretary of Council, Radio Society of Rhodesia, P.O. Box 2377, Salisbury, together with 5/- (50c) or 10 IRC's. A fair copy may accompany the original.

Additional stickers to Certificates already awarded will be sent free of charge. Speed credits are only given on actual passes — a pass at 35 w.p.m. does not give automatic credit for the lower speeds — these must be applied for.

Envelopes containing entries MUST bear MONDAY 12th JANUARY POST MARK. Later postmarks will disqualify that particular entry.

The tests are open to anyone be they licensed or not and we would welcome many entries from ZS.

The Fifth Test will take place on the 12th April, 1970.

## SOUTH WEST AFRICA CONTEST

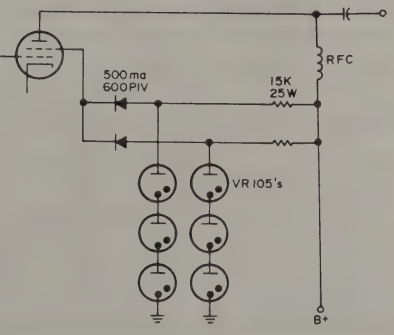
In order to assist DX amateurs wishing to contact South West African (ZS3) stations, a local contest has been arranged to run from 13.00 GMT on 6/12/69 to 13.00 GMT on 7/12/69. All bands (80m — 20m) will be used and all modes may be used. Only R.S.(T) reports will be required.

The W.A.S.W.A. award is available to any amateur contacting 5 ZS3 amateurs. (Zone 38 stations need 15 contacts). A certified copy of the log (No QSL's) together with 10 I.R.C.'s should be submitted to: The Branch Secretary, South African Radio League, P.O. Box 1100, Windhoek, South West Africa.

## More Current from VR Tubes

You can always operate VR-tubes in series to get higher regulated voltages, but what can you do when you need more current? If you put the VR's in parallel, when one branch ignites, the voltage is too low to ignite the other. A neat solution was found while designing a 4X150 linear: 2 diodes solve the problem by acting as switches. We used 500 ma, 600 PIV diodes as they were on hand.

Curtis Goodson, W4QBU



Die einde van die jaar is in sig, en as ons terugkyk dan moet ons seker erken dat dit 'n goeie jaar was vir baie van ons. Wat die Liga betref het ons baie nuwe lede bygekry en volgens die Takverslae is die nuwelinge baie bedrywig. Dit is ook verblydend om te sien dat die ou staatmakers weer op so baie Takkomitees dien, en hulle gewig ingooi. Ook moet ons dankie sê aan al die Takke wat gedurende die afgelope maande so getrou hulle verlsae na H.K. gestuur het. Dit geld ook vir die finansiële verslae. Dit wil voorkom of the nuwe komitees somar baie hard werk en dat daar 'n baie goeie Amateur gees tans heers.

Graag wil ek namens almal by H.K., vir julle almal en julle gesinne 'n baie Geseënde Kersfees en 'n Gelukkige en Voorspoedige nuwe jaar toewens.

The end of the year is in sight, and in looking back, we must admit that it has been a good year for most of us. The League has gained many new members and judging by branch reports they are all very keen and active. It is also good to see so many old timers on the various branch committees, all working very hard. We must also say thank you to all the branches, who sent in regular reports to H.Q. during the past months. This included financial statements. It would appear that the various new committees are working very hard, and that a fine Ham Spirit exists.

On behalf of us all at H.Q. we wish you all a Merry Christmas and a Happy New Year.

---

**LEAGUE 50th ANNIVERSARY:**

In 1975 we will celebrate the 50th Anniversary of the founding of our League and while your Council realizes that there is plenty of time for planning, it feels that the task of discussing ways and means and considering the best methods of celebrating the anniversary should be taken in hand without any delay and accordingly intends placing a motion on the agenda of the 1970 A.G.M. to form a committee of representatives of all branches for the purpose of formulating a programme of celebration. Any suggestions from our members will be welcomed. We are sure that with the co-operation of our branches and members a programme worthy of our League can be arranged.

**BRANCH COMMITTEE**

We are pleased to announce that at the recent Annual General Meeting of the South Coast Branch the following members were elected to the Branch Committee for the ensuing year:
Chairman: Bob Frost, ZS5FF

Vice-Chairman: Fred Spence, ZS5SG
Hon. Secretary: Mrs. Kay Munro, ZS5RI
Hon. Treasurer: Mrs. Edna Herbert, ZS5OB
Members: Mrs. Lue Frost, ZS5FN
Stan Herbert, ZS5OA
Scribe: Tiny Pitts, ZS5I

On behalf of our members we offer them our congratulations on their election and wish them and their branch a happy and fruitful year of office. To the retiring committee we offer our thanks for their services to their branch and our League.

**MARCO:**

The following information may be of interest to our members who belong to the Medical Fraternity:

The Medical Amateur Radio Council Ltd, short title Marco, is a charitable and scientific group of licensed amateur radio operators who are members of the Healing Arts whose aims and objects are: To perform research; to publish information on any topic relating to electronics or the healing arts; to establish non-commercial, non-profit amateur radio networks for the disemination of the above and for emergency assistance to all people throughout the world.

The postal address of Marco is:
c/o Edward Martin, Jr., M.D., 303 Resty Ct. Johnstown, Pennsylvania 15905. U.S.A.

**NEW AND RE-INSTATED MEMBERS**

We wish to welcome the following new and re-instated members to our ranks and hope they will be with us for many years:

ZS6C, M. E. J. Brook, Johannesburg Branch.
ZS6-156, B. H. Coetzer, Johannesburg Branch.
ZS6-157, E. J. Maguire, Johannesburg Branch.
ZS6-158, N. H. van Duffelen, Johannesburg Branch.
ZS6-155, A. J. Cilliers, Johannesburg Branch.
ZS6-154, L. D. Stewart, Johannesburg Branch.
ZS1QA, A. P. Burger, Tak Boland.
ZS1BN, B. J. Vosloo, Tak Boland.
ZS5UG, D. J. de Swardt, Durban Branch.
ZS4-009, J. P. Human, Tak Vrystaat.
ZS4-036, F. J. L. Durand, Tak Vrystaat.
ZS4CO, T. E. Krynauw, Tak Vrystaat.
ZS6-509, F. Sutherland, Tak Noord Transvaal.
ZS6APM, G. C. Snyman, Tak Noord Transvaal.
ZS6BHK, J. L. Liebenberg, Western Transvaal Branch.
ZS6AMG, K. C. Kinnear, Western Transvaal Branch.
ZS6-341, J. B. du Toit, Western Transvaal Branch.
ZS6-342, N. J. van der Linde, Western Transvaal Branch.
ZS6-343, P. Lambrechts, Western Transvaal Branch.
ZS6-344, XYL H. E. Leibenberg, Western Transvaal Branch.
ZS6-345, W. W. Castelein, Western Transvaal Branch.
ZS6-419, M. Baur, Northern Johannesburg Branch.
ZS6-420, XYL R. N. Baur, Northern Johannesburg Branch.

**VISITORS TO HEADQUARTERS OFFICE**

We were pleased to welcome the following visitors to H.Q. office and

trust they enjoyed the visit:
WB6URS, Richard Musicer — Los Angeles, California.
ZS5DC, H. Overgaard — Durban.
ZS3DW, D. Wilson — Oranjemund, S.W.A.
CR6EF, Josè G. Ferreira, — Angola.
G3NFV, R. Sykes, Surrey, England.
ZS6DI, J. O. Grobbelaar, Johannesburg.
ZS6BLV, Digby Londt — Johannesburg.
ZE1AN, Tom Short — Bulawayo.
ZS1NU, Dennis Gavin — Elgin.
ZS1EH, A. A. Snyman — Bellville.
ZS6AYU, G. D. Roux — Dunnottar.
ZS2-027, K. B. Andrew — East London.
A2CAQ, A. R. Edwards — Francistown.
ZS4IQ, G. D. van der Merwe, Bloemfontein.
ZS3PT, C. J. de la Querre — Keetmanshoop, S. W. A.
ZS2-032, C. D. MacBeth — King Williams Town.
J. G. Howson — Oranjemund.

Very 73,
**HERMAN FORRER, ZS1FT.**

## LUANDA FESTIVAL AWARD "LFA"

To Comemorate the "First International Fair of Luanda" the Liga Dos Amadores De Radio De Angola (L.A.R.A.). issued the "LFA" (LUANDA FESTIVAL AWARD).

It was issued to any Amateur Station or any short wave listener of the world.

To qualify, it will be necessary to make contact with 5 Luanda stations, one of them CR6 LA, working from the International Fair.

The same station can be worked on different bands, and each different band will count as a new contact.

All contacts from 9 to 23 December 1969, send Log to: L.A.R.A. — P.O. Box 484 — Luanda — Angola.

# CONTESTS

### 1969 SSB CONTEST

Yet another record entry with 88 logs received and a fair measure of support from our neighbouring DX friends.

After being second in 1967 and joint winner last year, Danny ZS2PX was a clear winner this time. Undoubtedly the present contest king of sideband Danny is a worthy winner of the N.J.B. SSB Trophy.

ZS1JU Paul entering our contest for the first time took second place. Third overall and top DX was Ken ZS1CU; this, together with his top DX score in the CW test, did, we hope, cheer him up before his visit to the white house.

The only active Swaziland station in the contest, Archie ZD5R, finished as usual high up on the result list. John ZS5JM who has not been heard in a contest for some long time was top division 5 and fifth overall. Sixth place and top division 6 was John ZS6HR. Gerald ZS5UW as always with a fine

log but 20 metre multipliers held him back this time. ZS1CS for the first time in our sideband test and with an exceptional 20 metre score. ZS5LP Louis a new and now keen convert to contests was ninth.

A little private rivalry between Doug ZS6AES and Giel ZS6NG two Pretoria committee men with Giel dutifully allowing his chairman to be slightly ahead.

7P8AB was third DX and again the only Lesotho station. ZE1CY put in a terrific 20 metre effort with the highest ever single band score. Tino CR6LX was the leader of the Angolan entry and Aurelio CR7IK led the CR7's, both first attempts at our contests.

Basil ZS3S had the highest ZS single band score and becomes the winner of the Highveld single band trophy. Doug ZS5DG decided on one band only this time and had the highest 40 metre score.

Among the listeners Robert ZS1-039 led the field and now collects wallpaper for each of our three 1969 contests. Jan ZS5-027 took second place and Irvine ZS6-190 third.

In all three contests 218 logs were received which is 35% higher than last year and more than double the 1967 entry. Gerald ZS5UW who consistently sends in a good log becomes the worthy winner of the H.O.S. Trophy for the highest aggregate score in all three contests. Royce ZS5FC who must be destined to just miss all the contest honours finished only two points behind Gerald.

For the third consecutive year Pietermaritzburg has won The Branch Participation Trophy.

Several stations asked for each prefix in zones 7 and 8 to be separate multipliers this would however put a greater emphasis on working these DX stations whereas the contest is primarily a domestic one. If we thought there would be suffieient support for a DX contest as well as our local one then we might investigate its possibility — what do you think?

To all those who sent in logs our thanks for your support, to those others who took part we hope you enjoyed our contests and we look forward to hearing from you next year.

**Contest Committee**

## THE Y. L. TROPHIES

The results of the YL Section of the Contests are as follows:

**C.W. — IRVINE TROPHY**

Mrs. Marge Colson, ZS2OB.

**A.M. PHONE — IRIS HAYES (ZS1AA) TROPHY**

Mrs. Doreen Lambert, ZS6APG.

**A.M. PHONE — EDITH BENNETT 80 METRE TROPHY.**

Mrs. Doreen Lambert, ZS6APG

**A.M. PHONE — PEARL PEARCE, 40 METRE TROPHY (Donated by E. Yazbek ZS4NQ)**

Miss Pearl Pearce, ZS5BP.

**SSB CLUB TROPHY**

Mrs. Doreen Lambert, ZS6APG.

Congratulations to the winners, with a special compliment to Mrs. Doreen Lambert ZS6APG, for winning three Trophies.

# Hamads

P.O. BOX 137, CAPE TOWN — RATES: R0.50 for 20 words, 2 cents per word thereafter for members. Non-members and commercial smalls: R1.00 for 20 words, 4 cents per word thereafter. PLEASE SEND THE CORRECT AMOUNT WITH EVERY HAMAD OR SMALL.

**FOR SALE:** STATION OF ZS2WF. Hallicrafter SX111 receiver with matching Hallicrafter HT37 transmitter, microphone, speaker, etc. This is a complete set plus BC221, and other accessories. Any reasonable offer will be accepted. Phone: Empangeni 410, after hours 808. A. A. Lamberti, P.O. Box 236, Empangeni.

**WANTED:** Pair of Selsyns motors 110v or 220v 50 or 60 cycles. Contact ZS3KW, Box 1250, Windhoek.

**FOR SALE:** For the Connoisseur: Hallicrafters SR400 CYCLONE the most advanced Transceiver for your home or auto. Complete with AC Power Supply and HA-20 DX Adapter at cost price. Contact ZS3E, P.O. Box 262, Phone 253 Luderitz.

**FOR SALE:** Heathkit SB 300 & 400 giving 190 watt PEP on all bands transceive or split. Only R260.00. Mosely TA36 Beam with 70' ft coax and "Instant" 35' waterpipe tower. Nylon rope, pulleys, counterweight. Delivery Jan 12th. R110.00 cash. Contact ZS6AR or ZS6TL at Pretoria 78-8494 or 71-3320.

**FOR SALE:** Transistors, Capacitors, Resistors, Bulk bargain packs. Receivers Txrs. Write for catalogue. ELECTRO-PACKS, P.O. Box 1073, PORT ELIZABETH.

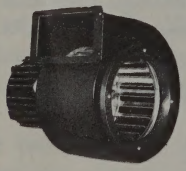
**FOR SALE:** 1. H.R.O. Receiver Completely Modified, new miniature tubes, product detector, Collins mechanical filter plus 80-10 meters band-spread coils — Price R60.00. 2. Central Electronics 10 B SSB exciter complete with 80-10 meter coils and all band VFO - Price R45.00.
All in excellent working condition. Contact Piet van Niekerk, ZS4IO, P.O. Box 325, Kroonstad, or telephone 2888 after 6 p.m.

**FOR SALE:** Two only Collins TC6 units complete. Operation from 12 volts. What offers? Reply H. G. Griffith, Box 11, Wepener, O.F.S.

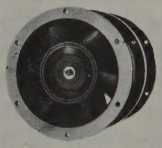
**PLEASE NOTE**
When sending in copy for HAMADS . . . if you haven't a typewriter, PLEASE PRINT CLEARLY IN BLOCK LETTERS to avoid errors.


ETRI

Microvent Fans & Blowers



AC
&
DC



*Compact & Efficient*
Designed for cooling Radio, Electrical & Electronic Equipment.

DC : 6–150v 60-600 cycles
AC : 220–380v Single or Three Phase
*Special purpose Fans on application.*

Contact
Eddie Wesselo
ZS6BFP

Africa Union
(Pty.) Ltd.

P.O. Box 1493,
Johannesburg.

Tel.: 22-0934

# TS-510 SSB TRANSCEIVER

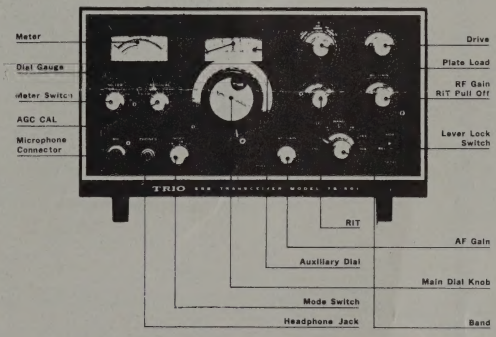
## SPECIAL FEATURES

1. The TS-510 is a high power, high stability SSB transceiver representative of the SSB era.
2. The Gothic style cabinet design, which gained the admiration of all users of the earlier 500 Series, is employed and will doubtlessly add to the appearance of any shack.
3. The use of an extremely stable VFO, a new development built around 2 FET's and 13 transistors, insures stable QSO's as long as you operate.
4. Accurate, double-gear tuning mechanism and linear tuning capacitor provide 1 kHz direct reading on all bands.
5. Frequency coverage has been reduced to 25 kHz for one complete rotation of the dial to facilitate tuning in of SSB signals.
6. A high frequency filter especially developed for the 510 Series is employed. Its excellent sharp factor makes sharp cutoff for both receive and transmission with the TS-510 possible.
7. Equipped with a selectivity switch for both SSB and CW modes. Insertion of a CW filter makes CW operation more pleasant. The CW filter is available as optional item.
8. The AGC circuit includes an amplifier to insure such high performance that even the largest input signal can be received without distortion. The AGC circuit also features signal strength meter indication independent of RF gain adjustment.
9. Built-in calibration circuit. This circuit is a 25 kHz multivibrator which permits accurate calibration for every rotation of the dial, such as when making QSY's.
10. Equipped with a side-tone oscillator which eliminates the necessity of adding an RF oscillator for accurate CW reception.
11. Amplifier type ALC circuit employed has excellent ALC characteristics as compared to those of a grid detector. Beautiful SSB signals are produced without sputtering.
12. The ALC voltage can be observed on the meter to monitor operating levels for correct on-the-air operation.
13. Equipped with an RIT circuit which permits fine adjustment during reception and tuner reading correction without changing the main dial setting.
14. The receiver is a dual conversion superheterodyne in which the RF and local oscillator are independently tuned. This, together with the high performance high frequency filter and bandpass filter, provides high stability and sensitivity.
15. AGC time constant can be switched between SLOW and FAST.
16. The use of an external VFO (VFO-5D) in conjunction with the internal VFO permits still more elaborate operation highly regarded by old hands.
17. Many accessory circuits, such as VOX, PTT, amplifier type AGC, RIT, CAL circuits, bandwidth switching, multimeter which indicates Ip, RF, HV, ALC, and signal strength, AGC switch, terminals for external VFO, ALC, and receiver input and output terminals.
18. The power supply are independently and externally connected to the transceiver. The Model PS-510 (containing speaker) power supply unit is also available.

**Price TS510 with PS510 – R285**
**Price VFO-5D – R 45**

## SPECIFICATIONS

| | |
|---|---|
| RECEIVE AND TRANSMIT FREQUENCIES: | 80 meter band 3.5 ~ 4.000MHz<br>40 meter band 7.0 ~ 7.300MHz<br>20 meter band 14.0 ~ 14.35MHz<br>15 meter band 21.0 ~ 21.45MHz<br>10 meter band A 28.0 ~ 28.5MHz<br>B 28.5 ~ 29.1MHz<br>C 29.1 ~ 29.7MHz |
| TYPE OF EMISSION: | SSB (A3J), CW (A1) |
| RATED INPUT TO FINAL STAGE: | 160W at 3.5 ~ 21MHz. 120W at 28MHz |
| ANTENNA INPUT IMPEDANCE: | 50 ~ 75Ω |
| CARRIER SUPPRESSION: | Less than -40 dB |
| SIDEBAND SUPPRESSION: | Less than -40 dB |
| MICROPHONE IMPEDANCE: | 50KΩ (high impedance) |
| TRANSMIT FREQUENCY CHARACTERISTIC: | 300 ~ 2700Hz (-6dB) |
| RADIATION OF UNWANTED COMPONENTS: | Less than -50 dB |
| RECEIVE SENSITIVITY: | 0.5μV, S/N ratio of 10dB at 3.5 ~ 21MHz<br>1.5μV, S/N ratio of 10dB at 28MHz |
| IMAGE RATIO: | More than 50 dB |
| IF INTERFERENCE: | More than 50 dB |
| FREQUENCY STABILITY: | Within +2kHz 60 minutes after the power switch is turned on. Within 100Hz after 30 minutes. |
| SELECTIVITY: | SSB: More than ±1.2kHz (at −6dB)<br>Less than ±2.4kHz (at −60dB)<br>CW: More than ±250Hz (at −6dB)<br>Less than ±750Hz (at −60dB)<br>Note: Selectivity values in the CW mode applies to a transceiver with the CW filter used. |
| AF OUTPUT: | More than 1 watt (with 10% distortion) |
| RECEIVER OUTPUT IMPEDANCE: | 8Ω for both speaker and headphones |
| POWER CONSUMPTION: | 315 watts at maximum output of reception (When the PS-510 is used) |
| VACUUM TUBES AND TRANSISTORS: | 14 vacuum tubes, 2 FET's, 13 transistors, and 29 diodes |
| DIMENSIONS: | 330 (W) × 180 (H) × 345 (D) mm<br>(13" W, 7" H, 13⅝" D) |
| WEIGHT: | 9.5kg (20.9 lbs) |




## NOW AVAILABLE EX STOCK

C.S. ELECTRONICS (PTY.) LTD.
In association with C. E. SCOTT (PTY.) LTD.
Showroom: 14 Bree Street, Cape Town
Telephone 2-1301 Telegrams: "ENERGY"

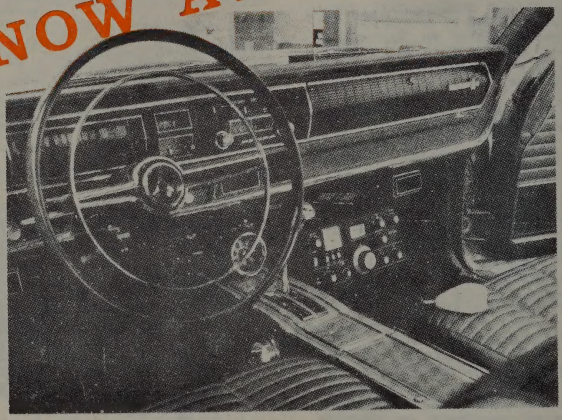
YAESU FT - 100

ALL BANDS TRANSCEIVER

Self-contained 5 band (80 - 40 - 20 - 15 - 10) SSB Transceiver

NOW AVAILABLE

CASH PRICE R365.00



TERMS ARRANGED

# HAMRAD (Pty.) Ltd.

INCORPORATING

CHENIK & BARNETT WIRELESS (PTY) LTD.

119 PRESIDENT STREET,

JOHANNESBURG

Phones : 22-4441. 23-4496. 23-4294 P.O. BOX 10982

PUBLISHED BY THE SOUTH AFRICAN RADIO LEAGUE, P. O. BOX 3911, CAPE TOWN
AND PRINTED BY TYPEX PRESS (PTY.) LTD., 201 BREE STREET, CAPE TOWN